Indo-US Financial Institutions Reform and Expansion Project - Debt Market Component FIRE(D)

Project Notes

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Environmental Impact Assessment for Urban Environmental Infrastructure Projects

As Indian cities rapidly urbanize, the need to improve and expand urban environmental infrastructure is great. In order to assure that infrastructure projects are planned, designed and implemented in an environmentally sustainable manner, it is important that comprehensive Environmental Impact Assessment (EIA) is undertaken during the project planning stage. EIA should address all relevant biological, physical and social issues associated with the planned project and make recommendations that avoid or minimize any adverse environmental impacts. This Project Note reviews the state of environmental impact assessment practice in India, describes efforts by the FIRE(D) Project to enhance the capacity of Indian institutions to conduct EIAs and suggests ways that national and state policy might be enhanced to increase the use of EIA to improve project design and implementation.

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The Rationale for EIA

Environmental Impact Assessment is a project development tool which, when properly applied, improves the long term sustainability of infrastructure activities. While EIA often is viewed narrowly as a regulatory hurdle that must be crossed before finalizing project design, it is actually a tool that should be part of the project planning and design process. Conducting comprehensive EIA is an opportunity to look systematically at the way a potential project will affect the surrounding natural and built environment, allowing consideration of alternatives to the proposed project and seeking out participation by affected communities in decision making.

Using EIA as a mechanism to assure community participation is increasingly important. Local residents generally have intimate historical knowledge about local environmental conditions and cultural resources. Therefore, their active participation often leads to design solutions that are better suited to local conditions, socially acceptable, more effective and long lasting. The delay or cancellation of some high profile infrastructure projects in the last few years demonstrates that social acceptance is crucial to project success in India.

The Legal and Policy Framework in India

EIA practice in India is relatively well established, though its application is not universal. The central government in India has created a foundation for environmental protection over the past two decades, beginning in 1974 with the enactment of the Water Prevention and Control of Pollution Act. A similar act addressing air pollution, the Air Prevention and Control of Pollution Act was passed in 1977. These laws established baseline thresholds for water and air quality.

In 1986, a more comprehensive Environmental Protection Act was promulgated which established a framework for environmental clearance, requiring that EIAs be conducted for development projects with a cost of Rs. 50 crore (approximately US $12.5 million) or more. To rectify ambiguity regarding exactly what type of projects were subject to the Act, specific project types were enumerated in a 1994 EIA Notification issued by the Ministry of Environment and Forests. The Notification identified 29 categories of projects for which proponents must conduct EIAs and receive a clearance from the central government. These include a range of manufacturing facilities, power plants, high-

Bilateral and Multilateral Donor Requirements

Operating alongside Indian government EIA requirements are those adopted by bilateral and multilateral development agencies for projects undertaken with donor funding. All of the major donor agencies with programs in India, including multilaterals -- the World Bank and the Asian Development Bank -- as well as bilaterals -- the US Agency for International Development (USAID), the Norweigian Agency for Development (NORAD), the Swedish International Development Agency (SIDA) and the Japan International Cooperation Agency (JICA) -- have some kind of environmental assessment standards. In general, donor EIA requirements establish a three-tier procedure:

1) Initial environmental examination of all projects that might reasonably result in environmental impacts; projects that do not include construction or other activities that are disruptive to the natural environment generally are not subject to environmental impact assessment.
2) A more thorough environmental assessment for projects that may have a significant environmental impact; and
3) A very detailed EIA for those projects that will have a significant environmental impact on a large geographical area, a large number of people or on a particularly sensitive environmental or cultural resource

The key distinction between Indian central government and development agency decision making regarding EIAs lies in the threshold mechanism. For the Indian government, it is the project type and funding level (Rs. 50 crores); for development agencies, it is the project type and the finding of the initial environmental examination.

ways, ports, airports, dams and tourist development in coastal areas.

The Notification does not require EIAs for urban environmental infrastructure projects (UEIP) because these are assumed to result in positive environmental impacts. However, this assumption neglects two important facts characteristic of large scale infrastructure development projects: (1) most create significant short term disruptions to the physical and social environment during and just after completion of construction activities; and (2) many create localized, long term environmental impacts. Proper EIA practice does *not* weigh project positive environmental impacts against negative environmental impacts; rather, any significant negative impacts should be clearly identified and mitigated to acceptable levels.

This misconception regarding EIA practice sometimes leads to a "balance sheet" approach to evaluating a project's environmental impacts, in which projects judged to have an overall positive impact are not subjected to rigorous EIA, despite prediction of some significant negative environmental impacts. Negative environmental impacts sometimes associated with UEIPs are discussed below, along with recommendations for improving the policy framework in order to enhance environmental protection.

In addition to central government requirements, some states, regional development authorities and municipal corporations have established their own EIA requirements for projects under their jurisdiction. These requirements vary widely from one jurisdiction to another. Environmental clearance generally falls under the jurisdiction of the State Pollution Control Boards in each state. Some states require EIAs for certain types of UEIPs, others do not. Those that do require environmental clearance for UEIPs, generally specify sewage treatment and solid waste disposal. The situation is similarly mixed at the regional and municipal levels.

EIA Methodology

The term 'environmental impact assessment' is used to describe a wide range of activities whose purpose is examination of the environmental consequences of proposed projects. While EIA techniques use everything from very simple checklists of common environmental parameters to highly specialized testing regimes to quantify air or water quality, a basic methodology generally is observed. The EIA process includes:

• ***Scoping to determine all potentially significant environmental impacts.*** Scoping should establish the spatial and temporal bounds of potential impacts and should be a participatory process. Participation from local communities in areas potentially affected by the project is best garnered through a combination of informal discussions, structured public meetings and meetings with NGOs and community-based organizations. Information gathered through public participation should be a vital part of subsequent decision making.

• ***Identifying the affected environment and creating a***

basic inventory of biological, geophysical and cultural resources located within the spatial bounds of the proposed project;

• ***Examining potentially significant environmental impacts.*** Generally field work is undertaken to gather qualitative and quantitative data sufficient to make a judgment about the impacts of the proposed project. Meeting with local residents is a critical part of this process because their knowledge of the local environment is unique.

• ***Considering a range of alternatives to the proposed project.*** Alternatives analysis includes looking at alternative sites for proposed facilities (e.g. a manufacturing plant project), alternative routes (e.g. a road building project), alternative means of achieving the same project objectives (i.e. constructing a run of river hydropower plant rather than creating a reservoir) and not undertaking the project at all ("the no action alternative").

• ***Developing an environmental management plan to mitigate or eliminate significant impacts and monitor future impacts.*** Mitigation generally includes structural and non-structural interventions that reduce the impact of the proposed project (i.e. plants grasses along steep side slopes to prevent erosion). Monitoring requires establishing baseline conditions for key environmental parameters prior to project implementation and collection of additional data for the same parameters at some point(s) after implementation. The parameters examined during the course of the EIA should include:

- biological resources (e.g. wildlife habitat, plant and animal species present);
- physical/chemical aspects (e.g. air, water or soil quality); and
- human-interest related factors (e.g. religious sites, schools, homes).

When designing a monitoring plan, it is important to isolate measured parameters to the maximum extent possible to minimize the effect that factors external to the project have on measured parameters. For example, a point at which water quality is measured downstream of a new manufacturing facility should not be in the downstream path of any other new effluent source.

Developing an EIA Handbook

In the past, FIRE(D) Project Partners have taken two different approaches to conducting initial environmental examination of proposed projects. The Housing and Urban Development Corporation (HUDCO) conducts an in-house Environmental and Social Appraisal (ESA) as part of the overall project appraisal process. If this ESA determines that the project may result in significant environmental impacts, HUDCO requires that the project proponent conduct a comprehensive EIA. Infrastructure Leasing & Financial Services (IL&FS), on the other hand, has not until recently kept in-house technical capability to screen potential projects, but instead has retained consultants to undertake this work. IF&LS now has developed in-house environmental expertise with staff based in its Mumbai headquarters. To improve the capacity of Indian institutions to conduct EIAs, the FIRE(D) Project worked with ENC Consulting Engineers to develop a handbook which suggests a two-step process for addressing EIA issues.

IEE: First, an Initial Environmental Examination (IEE) is conducted using a simple checklist. An IEE provides a snapshot of the environmental conditions associated with the proposed project. Three checklists, one each for water supply; sewerage and sanitation; and solid waste management projects have been developed. In each case, the checklist covers issues related to siting, design, construction and operations, as well as issues unique to the type of project. The IEE should suffice when the probable negative environmental impacts of the proposed projects are found to be insignificant.

SEI: If significant environmental impacts are likely to occur, however, a detailed EIA should be conducted, under which Significant Environmental Impacts (SEI) are analyzed. Environmental parameters to be considered include water quality, water supply and sanitation, drainage, land use, ecology, forests, wildlife, fisheries, seismology, air quality, noise pollution, historical monuments, minerals, public health, and socioeconomic factors.

Case Studies: This handbook also presents three case studies of pending UEIPs: a water supply project in Ahmedabad, and a sewerage project and a sanitation project in Vijayawada. Using the checklists developed, IEEs were conducted and in all three cases, an SEI was deemed necessary. Though each of the three projects presented significant benefits in terms of environmental quality, potential negative impacts were also identified in each case — ranging from minor inconvenience during the construction phase to pollution of drinking water and potential contamination of a pilgrimage site. In each case, a series of mitigation measures was recommended to reduce significant environmental impacts to acceptable levels.

Recommendations for the Future

Require EIAs for UEIPs. The central government legislative and regulatory framework currently does not require that an EIA or any other type of environmental examination be undertaken for urban environmental infrastructure projects. While UEIPs generally improve overall environmental conditions, they can create other environmental concerns. For example, a waste treatment facility concentrates wastewater in a relatively small area, where it is treated to some degree and ultimately reintroduced into adjacent waterways. Depending on the degree of treatment, the concentrated wastewater discharge can cause significant environmental problems. In addition, virtually all UEIPs have associated construction activities that cause short- and sometimes long-term environmental impacts, such as erosion or wildlife habitat loss. These projects, therefore, should be added to the Environmental Notification and subjected to EIA requirements in the same manner as other infrastructure projects.

In addition to extending the range of projects that are subject to EIAs, it makes sense to increase the scope of EIA requirements to include significantly increased attention to public participation. Failure to provide ample opportunity for affected communities to participate in the project planning and design process creates the potential for low social acceptance and misses opportunities to incorporate local environmental knowledge that improves project design.

Failure to address community participation has drastically undercut the effectiveness of EIAs (and project implementation) in many countries. Private sector-, government- and international development agency-funded projects alike have been significantly delayed or canceled as a direct result of public opposition that might have been addressed through meaningful public participation.

Provide EIA Training to Municipalities. Complementary to the need to include UEIPs in the list of projects requiring EIAs is the need to provide training to municipal officials in the basic principles of EIA. It is not necessary to develop a cadre of skilled technicians at the municipal level who are capable of conducting EIAs. It is far more cost effective for project proponents, either firms or government entities, to engage consultants to undertake the EIAs. Instead, the objective of this training should be educating officials to the point that they are able to:

- Draft appropriate scopes of work for conducting EIAs;
- Provide guidance to consultants during the course of EIA work; and
- Competently review EIAs for clearance.

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This *Project Note* is based on the FIRE(D) Project Technical Report *Guidelines for EIA for Urban Environmental Infrastructure Projects* by ENC Consulting Engineers, New Delhi.

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The mission of the Indo-US FIRE (D)Project is to foster the development of a commercially viable urban infrastructure finance system to finance improvements in environmental services for all citizens, including the urban poor. It is being implemented through four objectives:

- Development of commercially viable urban environmental infrastructure projects in selected demonstration cities;
- Development of a commercially viable urban environmental infrastructure finance system;
- Improvement of municipal financial management as well as the administration of environmental services in demonstration cities;
- Strengthening the capacity of public and private sector professionals and technicians to achieve these objectives.

This new approach, which emphasizes commercial viability, enables Indian cities and urban authorities to respond more effectively to the greatest needs: increasing access to services and improving service levels. Significant benefits for the poor, in particular, can be achieved through a commercial orientation.

USAID is assisted in implementation of this project by Community Consulting International (CCI), a US firm with an office located in New Delhi. This assistance is provided through a task order issued by USAID under its contract with the International City/County Management Association (ICMA).

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